

Amendments to the Claims

Please cancel Claims 1, 2, 9 and 10 without prejudice to or disclaimer of the subject matter recited therein.

Please amend Claims 3-8 and 11-15 and add new Claims 16-22 to read as follows.

Claims 1 and 2 (cancelled)

3. (Currently amended) An ink jet printing apparatus according to claim † 5, wherein the said preliminary ejection means executes the ejection operation of the nozzles with a large ink ejection volume before the ejection operation of the nozzles with a small ink ejection volume.

4. (Currently amended) An ink jet printing apparatus according to claim † 5, wherein the said preliminary ejection means sets an ejection frequency of the nozzles with a small ink ejection volume lower than an ejection frequency of the nozzles with a large ink ejection volume.

5. (Currently amended) An ink jet printing apparatus according to claim †, for forming an image by ejecting ink from a print head onto a print medium, wherein the print head has arrayed in nozzle columns at least two kinds of nozzles that

eject different volumes of ink supplied from a common ink chamber, the ink jet printing apparatus comprising:

preliminary ejection means for performing ink ejections, not involved in the formation of an image, from the nozzles of the print head;

suction means for sucking out ink from the print head through the nozzles of the print head; and

control means for causing said suction means to suck out ink from the print head and then said preliminary ejection means to perform the ink ejections,

wherein, in an ink ejection operation by said preliminary ejection means following the suction of ink by said suction means, said control means causes the nozzles of the same kind to eject ink simultaneously and controls to set the number of ejections from the nozzles with a large ink ejection volume to be greater than the number of ejections from the nozzles with a small ink ejection volume, and

wherein the print head has different nozzle columns for different ink colors, and the said preliminary ejection means causes the same kind of nozzles in the nozzle columns of each ink color to perform an ejection operation at a time.

6. (Currently amended) An ink jet printing apparatus according to claim 1 5, wherein the print head is scanned in a direction different from a direction in which the nozzles are arrayed and, during this the scan operation, ejects ink onto a the print medium, the print medium is fed a predetermined distance in a direction different from the scan direction of the print head in a motion relative to the print head, and the print head

scan and the print medium feed are alternately performed repetitively to form an image on an entire surface of the print medium; medium, and

wherein the at least two kinds of nozzles that eject different volumes of ink supplied from the common ink chamber are arranged alternately in a direction different from the scan direction of the print head to form nozzle columns, and the nozzles in the nozzle columns with a large ink ejection volume are made to execute an ejection operation in advance of the nozzles with a small ink ejection volume.

7. (Currently amended) An ink jet printing apparatus according to claim 1, for forming an image by ejecting ink from a print head onto a print medium, wherein the print head has arrayed in nozzle columns at least two kinds of nozzles that eject different volumes of ink supplied from a common ink chamber, the ink jet printing apparatus comprising:

preliminary ejection means for performing ink ejections, not involved in the formation of an image, from the nozzles of the print head;

suction means for sucking out ink from the print head through the nozzles of the print head; and

control means for causing said suction means to suck out ink from the print head and then said preliminary ejection means to perform the ink ejections,

wherein, in an ink ejection operation by said preliminary ejection means following the suction of ink by said suction means, said control means causes the nozzles of the same kind to eject ink simultaneously and controls to set the number of ejections

from the nozzles with a large ink ejection volume to be greater than the number of  
ejections from the nozzles with a small ink ejection volume, and

wherein the number of preliminary ejections from the nozzles with a small ink ejection volume is defined as a required number of preliminary ejections for discharging ink from ~~nozzles~~ nozzle paths with a small ink ejection volume.

8. (Currently amended) An ink jet printing apparatus according to claim + 5, wherein the nozzles each generate a bubble in ink by thermal energy to eject ink as a droplet with a pressure of the inflating bubble.

Claims 9 and 10 (cancelled)

11. (Currently amended) A preliminary ink ejection method according to claim 9 13, wherein the said preliminary ejection step executes the ejection operation of the nozzles with a large ink ejection volume before the ejection operation of the nozzles with a small ink ejection volume.

12. (Currently amended) A preliminary ink ejection method according to claim 9 13, wherein the said preliminary ejection step sets an ejection frequency of the nozzles with a small ink ejection volume lower than an ejection frequency of the nozzles with a large ink ejection volume.

13. (Currently amended) A preliminary ink ejection method according to claim 9; using an ink jet printing apparatus, wherein the ink jet printing apparatus forms an image by ejecting ink from a print head onto a print medium, wherein the print head has arrayed in nozzle columns at least two kinds of nozzles that eject different volumes of ink supplied from a common ink chamber, the preliminary ink ejection method comprising:

a preliminary ejection step of performing ink ejections, not involved in the formation of an image, from the nozzles of the print head;

a suction step of sucking out ink from the print head through the nozzles of the print head; and

a control step of causing said suction step to suck out ink from the print head and then said preliminary ejection step to perform the ink ejections,

wherein, in an ink ejection operation in said preliminary ejection step following the suction of ink in said suction step, said control step causes the nozzles of the same kind to eject ink simultaneously and controls to set the number of ejections from the nozzles with a large ink ejection volume to be greater than the number of ejections from the nozzles with a small ink ejection volume, and

wherein the print head has different nozzle columns for different ink colors, and the said preliminary ejection step causes the same kind of nozzles in the nozzle columns of each ink color to perform an ejection operation at a time.

14. (Currently amended) A preliminary ink ejection method according to claim 9; using an ink jet printing apparatus 13, wherein the print head is scanned in a

direction different from a direction in which the nozzles are arrayed and, during ~~this~~ the scan operation, ejects ink onto ~~a~~ the print medium, the print medium is fed a predetermined distance in a direction different from the scan direction of the print head in a motion relative to the print head, and the print head scan and the print medium feed are alternately performed repetitively to form an image on an entire surface of the print medium; medium, and

wherein the at least two kinds of nozzles that eject different volumes of ink supplied from the common ink chamber are arranged alternately in a direction different from the scan direction of the print head to form nozzle columns, and the nozzles in the nozzle columns with a large ink ejection volume are made to execute an ejection operation in advance of the nozzles with a small ink ejection volume.

15. (Currently amended) A preliminary ink ejection method according to claim 9, using an ink jet printing apparatus, wherein the ink jet printing apparatus forms an image by ejecting ink from a print head onto a print medium, wherein the print head has arrayed in nozzle columns at least two kinds of nozzles that eject different volumes of ink supplied from a common ink chamber, the preliminary ink ejection method comprising:

a preliminary ejection step of performing ink ejections, not involved in the formation of an image, from the nozzles of the print head;

a suction step of sucking out ink from the print head through the nozzles of the print head; and

a control step of causing said suction step to suck out ink from the print head and then said preliminary ejection step to perform the ink ejections,  
wherein, in an ink ejection operation in said preliminary ejection step  
following the suction of ink in said suction step, said control step causes the nozzles of the  
same kind to eject ink simultaneously and controls to set the number of ejections from the  
nozzles with a large ink ejection volume to be greater than the number of ejections from  
the nozzles with a small ink ejection volume, and

wherein the number of preliminary ejections from the nozzles with a small ink ejection volume is defined as a required number of preliminary ejections for discharging ink from ~~nozzles~~ nozzle paths with a small ink ejection volume.

16. (New) A preliminary ink ejection method according to claim 15, wherein said preliminary ejection step executes the ejection operation of the nozzles with a large ink ejection volume before the ejection operation of the nozzles with a small ink ejection volume.

17. (New) A preliminary ink ejection method according to claim 15, wherein said preliminary ejection step sets an ejection frequency of the nozzles with a small ink ejection volume lower than an ejection frequency of the nozzles with a large ink ejection volume.

18. (New) A preliminary ink ejection method according to claim 15, wherein the print head is scanned in a direction different from a direction in which the nozzles are arrayed and, during the scan operation, ejects ink onto the print medium, the print medium is fed a predetermined distance in a direction different from the scan direction of the print head in a motion relative to the print head, and the print head scan and the print medium feed are alternately performed repetitively to form an image on an entire surface of the print medium, and

wherein the at least two kinds of nozzles that eject different volumes of ink supplied from the common ink chamber are arranged alternately in a direction different from the scan direction of the print head to form nozzle columns, and the nozzles in the nozzle columns with a large ink ejection volume are made to execute an ejection operation in advance of the nozzles with a small ink ejection volume.

19. (New) An ink jet printing apparatus according to claim 7, wherein said preliminary ejection means executes the ejection operation of the nozzles with a large ink ejection volume before the ejection operation of the nozzles with a small ink ejection volume.

20. (New) An ink jet printing apparatus according to claim 7, wherein said preliminary ejection means sets an ejection frequency of the nozzles with a small ink ejection volume lower than an ejection frequency of the nozzles with a large ink ejection volume.

21. (New) An ink jet printing apparatus according to claim 7, wherein the print head is scanned in a direction different from a direction in which the nozzles are arrayed and, during the scan operation, ejects ink onto the print medium, the print medium is fed a predetermined distance in a direction different from the scan direction of the print head in a motion relative to the print head, and the print head scan and the print medium feed are alternately performed repetitively to form an image on an entire surface of the print medium, and

wherein the at least two kinds of nozzles that eject different volumes of ink supplied from the common ink chamber are arranged alternately in a direction different from the scan direction of the print head to form nozzle columns, and the nozzles in the nozzle columns with a large ink ejection volume are made to execute an ejection operation in advance of the nozzles with a small ink ejection volume.

22. (New) An ink jet printing apparatus according to claim 7, wherein the nozzles each generate a bubble in ink by thermal energy to eject ink as a droplet with a pressure of the inflating bubble.